

very slowly. The broadleaf trees grow under a variety of shade and soil conditions and their roots ramify in all directions. I pulled up seedlings and small plants (I have them dried) of every Taxad and Conifer I came across and in every case found the roots clothed with tubercles. I did the same with the broadleaf trees but found no tubercles present. My attention was directed to the presence of tubercles on the roots of Taxads and Conifers by Captain L. MacIntosh Ellis, the Director of the Forests. Later I found that their presence was known to others but the significance does not appear to have been grasped by anyone but by the Director of Forests and no investigations of this phenomenon have been attempted. The tubercles are analogous with those on the roots of Leguminous plants and in all probability the bacteria break up the raw humic acids and convert them into readily available salts. It is a simple and beautiful case of symbiosis but I have no knowledge of such in our northern Taxads and Conifers though it is known in the case of the Alders and a few other broadleaf trees other than Leguminosae with which it is general. This discovery is important for, if I am right in my conclusions, the organisms within the tubercles are controlling factors in the rate of growth of the Taxads and Conifers of New Zealand. As evidence let us consider what happens in the forests. The lumberman fells and removes the merchantable trees thus opening up the forest floor to the full influence of the sun and wind. The peaty soil quickly dries, fires come up and destroy not only the remaining growing vegetation but also the peat and the organisms in it thereby rendering the very soil virtually useless for the regrowth of the Taxads and Conifers. When plants of these trees are placed in ordinary garden soil there is no humic acid present even if there be tubercles on the roots of the plants when brought from the forest and consequently they merely linger and their growth is very slow without the acid of the symbiotic organisms. This, I believe, is briefly the whole story of the poor regeneration and slow growth of the Taxads and Conifers in the cut over forests of New Zealand.

HOBART, TASMANIA, *March, 1921.*

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## BIBLIOGRAPHICAL NOTES

ETHELYN M. TUCKER

Hempel und Wilhelm. *Bäume und sträucher des waldes.* The inclusive dates of the three abtheilungen of "Die bäume und sträucher des waldes in botanischer und forstwirthschaftlicher beziehung, von Gustav Hempel und Karl Wilhelm" are readily found to be 1889 to 1899. The dates of publication of the twenty lieferungen forming these abtheilungen are, however, not obtained so easily and are worthy of notice. From *Botanische zeitung* and *Oesterreichische botanische zeitschrift*, with occasional reference to *Flora* for these years, the dates and pages included

in each *lieferung* have been ascertained, with the exception of *lieferungen* 6 and 16, in which cases, though actual dates are not found, there is very little doubt of the correctness of the dates attributed to them in the following note:

Abth. 1		
Lief. 1	pp. 1-32	1889
" 2	" 33-56	1889
" 3	" 57-80	1890
" 4	" 81-96	1890
" 5	" 97-128	1891
" 6	" 129-152	1892 (possibly 1891)
" 7	" 153-176	1892
" 8	" 177-200	1893
Abth. 2		
Lief. 9	pp. 1-16	1893
" 10	" 17-40	1894
" 11	" 41-64	1895
" 12	" 65-88	1895
" 13	" 89-112	1896
" 14-15	" 113-148	1897
Abth. 3		
Lief. 16	pp. 1-24	1898 (probably)
" 17	" 25-48	1898
" 18	" 49-72	1899
" 19	" 73-96	1899
" 20	" 97-140	1899

The work is illustrated by 342 figures in the text and 60 beautiful colored plates from original paintings by W. Liepoldt, the whole forming one of the best books on the trees and shrubs of central Europe in their relation to culture and forestry.

#### Siebold, P. F. von. *Flora japonica*.

In the *Gardeners' Chronicle* for 1867 is a sketch of the life of Philipp Franz von Siebold written by his friend, Professor Oudemans, of Amsterdam, which forms an interesting introduction to his "*Flora Japonica*," and to this, chiefly, we are indebted for the following note:

In 1823 Siebold accompanied the Dutch embassy to Japan as physician and naturalist. Upon his arrival there he was compelled, like all other foreigners, to confine his explorations to the vicinity of *Dezima*, to which he refers in his "*Flora Japonica*" as the "*Eldorado of the Hollanders*." Soon, however, in consequence of his reputation as a man of science, he acquired more freedom, the Japanese flocked to learn of him and from them in turn he obtained the best and most reliable information respecting the political, historical and geological features of a country then com-

paratively unknown. In 1826 he had the good fortune to accompany the Dutch ambassador to the court of Yeddo. In 1828 on the point of his departure for Europe he was arrested and thrown into prison, nearly losing his life in an effort to save his friend, the Imperial astronomer and librarian, who had furnished him with a hitherto unpublished map of the empire. However, on the 7th of July, 1830, he was allowed to return home and soon after his arrival in Holland he set about arranging his rich store of scientific material, and published several valuable works relating to Japan. Among the latter was his "Flora Japonica; sive, Plantae, quas in imperio japonico collegit, descripsit, ex parte in ipsis locis pingendas curavit, Dr. Ph. Fr. de Siebold. Sectio prima continens plantas ornatui vel usui inservientes. Digessit J. G. Zuccarini." This is one of the most important works on the Japanese flora. The two volumes bearing the dates respectively 1835 and 1870 were issued in 30 fascicles, the dates of which, so far as we have been able to ascertain them, are as follows:

	Vol. i.	
Fasc. 1-2	(tafel 1-10)	1835
" 3-4	( " 11-20)	1836
" 5-6	( " 21-30)	1837
" 7-8	( " 31-40)	1838
" 9-10	( " 41-50)	1839
" 11-12	( " 51-60)	1840
" 13-14	( " 61-70)	1840
" 15-16	( " 71-80)	1841
" 17-18	( " 81-90)	1841
" 19-20	( " 91-100)	1841
	Vol. ii.	
Fasc. 21-23	(tafel 101-115)	1842 (or 1843)
" 24-25	( " 116-124 <sup>b</sup> )	1844
" 26-30	( " 125-150)	1870

This work is usually quoted as "Siebold and Zuccarini. Flora japonica," the descriptions having been written by Zuccarini, "et il a ajouté aux figures des espèces un grand nombre d'analyses extrêmement instructives." In the second edition of Pritzels it is entered under the two names and the dates given as 1835-44. "Centuria prima (fasc. i-xx) 1835. — Centuria altera. Fasc. i-x. 1842-70." These dates, at first perplexing, are explained by the fact that Zuccarini's connection with the work ended with fasc. 25, 1844, his death occurring in 1848. After Siebold's death, in 1866, the completion of the work was undertaken by Miquel who edited fasc. 26-30, including plates 125-150; these fascicles, together with the title-page for volume ii, which reads "Ab auctoribus inchoatum relictum ad finem perduxit F. A. G. Miquel" were issued in 1870. On the verso of this title we find "Hujus voluminis paginas 1-44 curavit b. Zuccarini, sequentes F. A. Guil. Miquel, speciminibus plantarum siccis, tabulis et schedis a b. de Siebold relictis usus."

In volume one there is an engraved title-page having an illustration of a monument erected to Kaempfer and Thunberg in Dezima, upon which the inscription:

E. Kaempfer, C. P. Thunberg  
 Ecce! virent vestrae hic plantae florentque quotannis  
 Cultorum memoresserta feruntque pia  
 Ph. Fr. de Siebold.

Beneath this illustration is inscribed:

Monimentum in memoriam  
 Engelberti Kaempferi et Caroli Petri Thunbergii  
 In Horto botanico insulae  
 Dezima  
 Cura et sumptibus  
 Ph. Fr. de Siebold  
 Positum.

MDCCCXXVI.

In his "Nippon. Archiv zur beschreibung von Japan," 2<sup>e</sup> Aufl., bd. i, Siebold mentions the existence of such a monument, but perhaps through excessive modesty forbears to mention his connection with it. There can be little doubt that the date 1826 refers to the year in which the monument was erected.

Following this ornamental title page is another engraved page, reading: "Hommage à son altesse impériale royale Madame la Princesse d'Orange Anne Paulowna, Grande Duchesse de Russie."

One of the greatest services rendered by Siebold to horticulture was the laying out of his nursery ground in the immediate vicinity of Leyden in 1843. This garden was better known as "Jardin d'acclimatation du Japon et de la Chine," and in it were introduced many valuable trees and other plants.